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benzine and benzol; the term "benzine" is (correctly) used on page 110 to designate the petroleum product. On page 195 gum arabic and the gums of peach and cherry trees are mentioned as typical examples of gums. In the next line is the statement: "When treated with dilute acids the gums are converted into dextrose sugars and acid products." The gums mentioned as examples all give pentose sugars and not dextroses. Page 201: "Beeswax, for example, is composed of palmitic and ethyl radicals." The chief constituent of beeswax is myricyl palmitate, not ethyl palmitate. The whole of page 20 is devoted to description of plates I and II. On page 267 plate III is mentioned. There are no plates in the book. On page 406 there is a table of "Corrections;" but no such errors exist on the pages indicated.

In spite of some faults, there is a judicious selection of subjects, and in the applied part of the book a clear and concise treatment of the matter presented. While the book is not recommended as a text for elementary chemistry, the applied portions should prove very useful to students of agriculture, and interesting to all who, having an elementary knowledge of chemistry, are concerned in the subject of plant and animal nutrition.—H. N. McCov.

The Bonn text-book.

THE FACT that this book,³ addressed to college students, has reached its sixth edition in ten years is ample evidence of its popularity. One notices at once the name of Dr. G. Karsten instead of the late Dr. A. F. W. Schimper, who wrote the chapters on phanerogams for the previous editions. As before, the first three sections on morphology, physiology, and cryptogams, are treated by Strasburger, Noll, and Schenck respectively. In these three sections the sequence of topics and the method of treatment are practically the same as in the fifth edition, the principal revision appearing in the changes which have been necessary in order to keep the work fully abreast with recent contributions.

In the section on morphology the new figures and perhaps the most extensive revision of the text concerns the central cylinder of vascular plants. In the section on physiology the chapter on the "Stability of the plant body" has received a much more extended treatment than heretofore. More attention has also been given to ecology. In the cryptogams several new figures have been added, and slight changes, occasioned by recent studies, appear in the text.

In the treatment of the phanerogams one cannot speak of revision, for the entire section has been rewritten by Dr. G. Karsten. The gymnosperms receive more attention than previously. The arrangement of the angiosperms is practically that followed in Engler and Prantl's *Pflanzenfamilien*. By abbreviating the diagnoses of orders and families, Professor Karsten has

³STRASBURGER, E., NOLL, F., SCHENCK, H., and KARSTEN, G., *Lehrbuch der Botanik für Hochschulen*, 6th ed. Imp. 8vo. pp. viii + 591. figs. 741. Jena: Gustav Fischer. 1904. M 7.50.

made room for more interesting and important material. Particular attention is given to economic plants, especially those which have medicinal properties.

The number of illustrations has been increased from 686 to 741. Many of the old figures have been replaced by new ones, and the colored figures, which have always been a feature of the book, have been much improved by recent methods. Both authors and publishers deserve commendation for the frequent editions which have kept this work so thoroughly up to date.—C. J. CHAMBERLAIN.

Alpine vegetation.

ONE OF THE most valuable of tasks today is the compilation and systematization of scattered material. Such a labor has been performed by Marie Jerosch⁴ in connection with the alpine vegetation of Switzerland. No claim to original work is put forth, although the critical study of 250 titles and the molding of discordant data into a harmonious whole are at least of equal value with most original investigations.

The work is essentially floristic rather than ecological. The first chapter deals with fundamental principles and motives, such as the origin of species, plant migrations, and polytopic appearance of species. The author is favorably inclined to all of the current evolutionary theories, and gives especial attention to Wettstein's seasonal dimorphism, and to mutation; the claim is made that Heer held a view essentially equivalent to mutation. The polytopic theory of Briquet is treated fully, but not very favorably. The second chapter considers the alpine and arctic climates from a comparative standpoint. The third and fourth chapters have to do with the Tertiary and Pleistocene history of the alpine regions. Then follows an account of postglacial changes, leading to a detailed consideration of the elements of the present alpine flora, together with their age and origin. Jerosch holds that an interglacial xerothermic or steppe period has been proved by the facts of plant geography, paleontology, and geology; there is more doubt as to a similar postglacial period.

There is no better illustration than that afforded by this book of the possibilities in floristic study. The glacial and postglacial floras of Switzerland and Scandinavia with all their vicissitudes are known almost as accurately as the floras actually in existence today. The fact that almost nothing is known of the glacial and early postglacial vegetation of America ought to stimulate many to study in this important and productive field.—H. C. COWLES.

Ecology of the Lena valley.

CAJANDER has given an excellent account of the vegetation of the alluvium of the lower Lena⁵, in which particular attention is paid to the genetic

⁴JEROSCH, MARIE, *Geschichte und Kerknuff der schweizerischen Alpenflora*. Leipzig: Wilhelm Engelmann. 1903. M 8.

⁵CAJANDER, A. K., *Die Alluvionen des unteren Lena-Thales*. Helsingfors. 1903.